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(71) Applicants
Bowater Packaging
Limited, Bowater House,
Knightsbridge, London
SW1X 7LR

(72) Inventors
G. Hunter,
M. J. Holmes

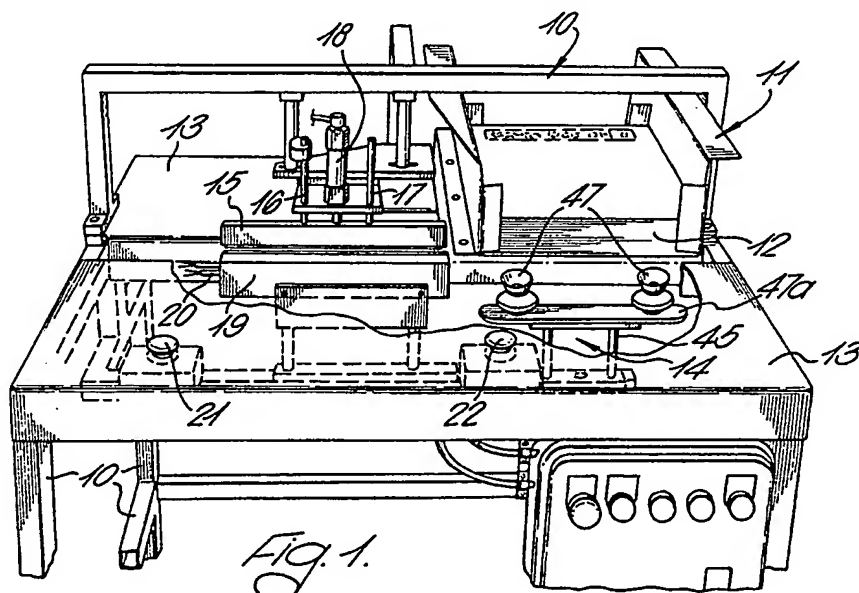
(74) Agents
Carpmaels & Ransford,
43, Bloomsbury Square,
London WC1A 2RA

(54) Heat-sealing articles to a
display card

(57) A machine for heat sealing
articles, such as sachets of snack type
foods, to dispenser or display cards
comprises a hopper 11 containing a
stack of cards 12 pre-coated with a
heat-sealing adhesive. A transfer

mechanism 14 moves the cards one
at a time onto a table 13.

Bags of nuts are heat sealed to the
card by a pressure bar 15 moved by
a ram 18 under operator control. Heat
is provided by a heater bar 19 below
the table. The cards are moved along
by an indexing mechanism to enable a
series of rows of bags to be applied.
Sensors indicate when a card is full
and when a full card has been
removed to initiate supply of a further
card. Two handed operation of the
pressure bar is a safety feature.



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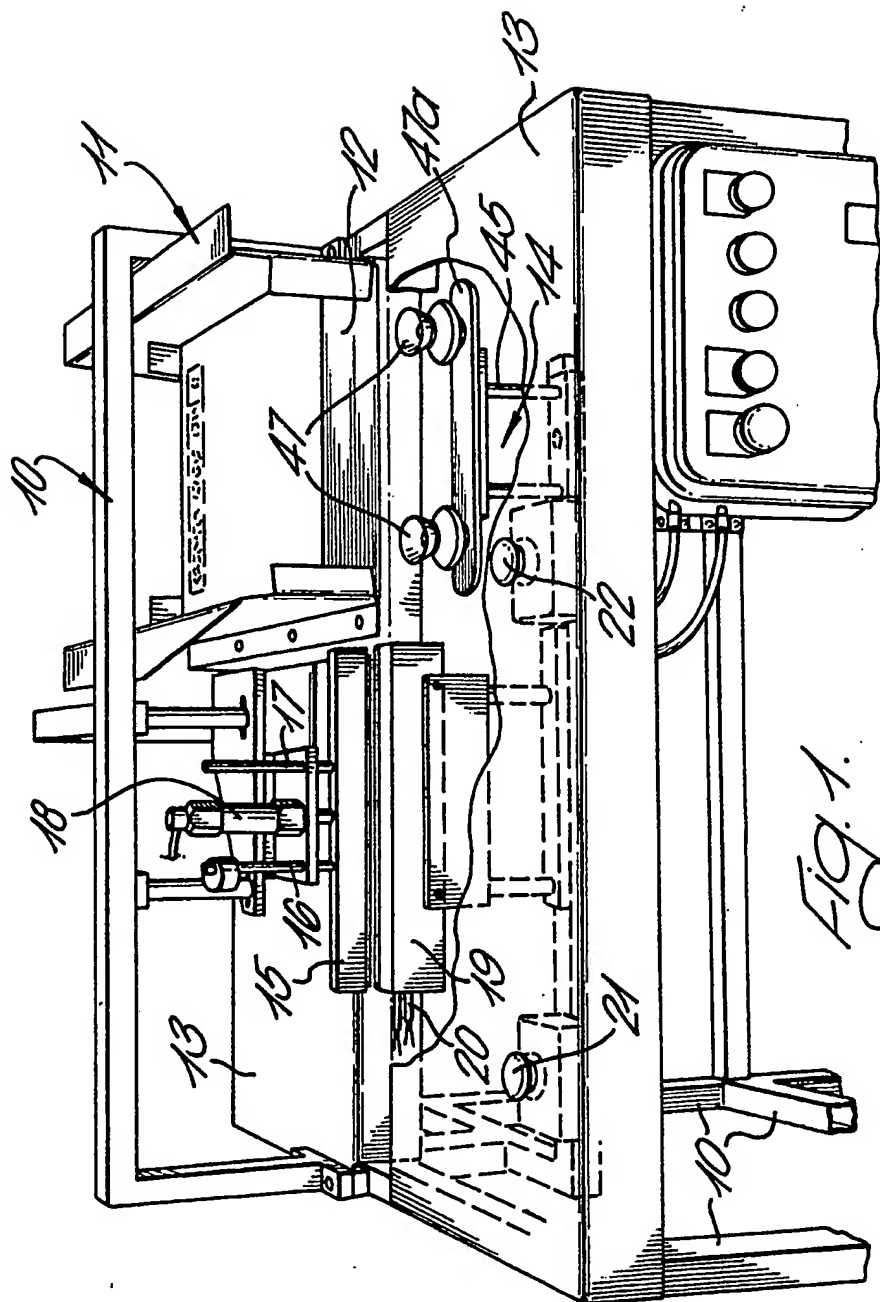
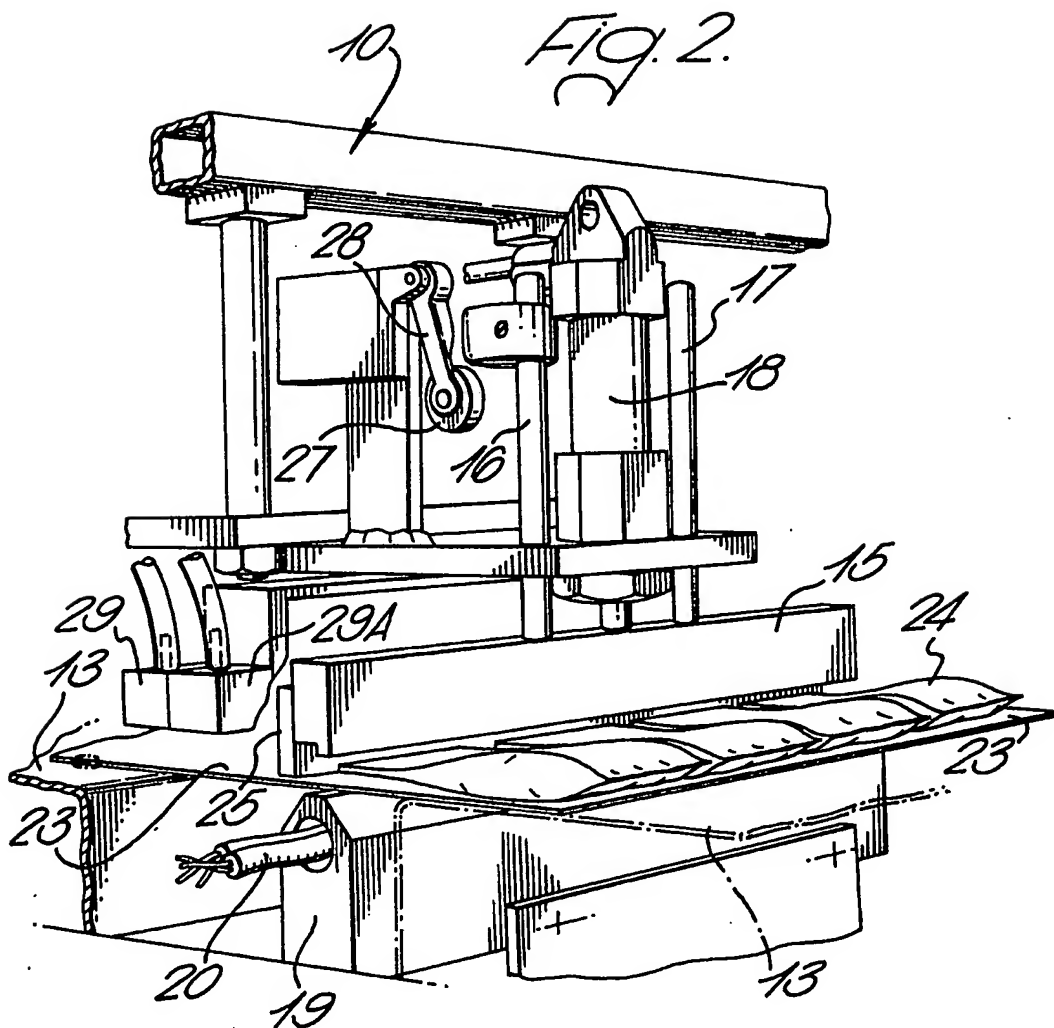
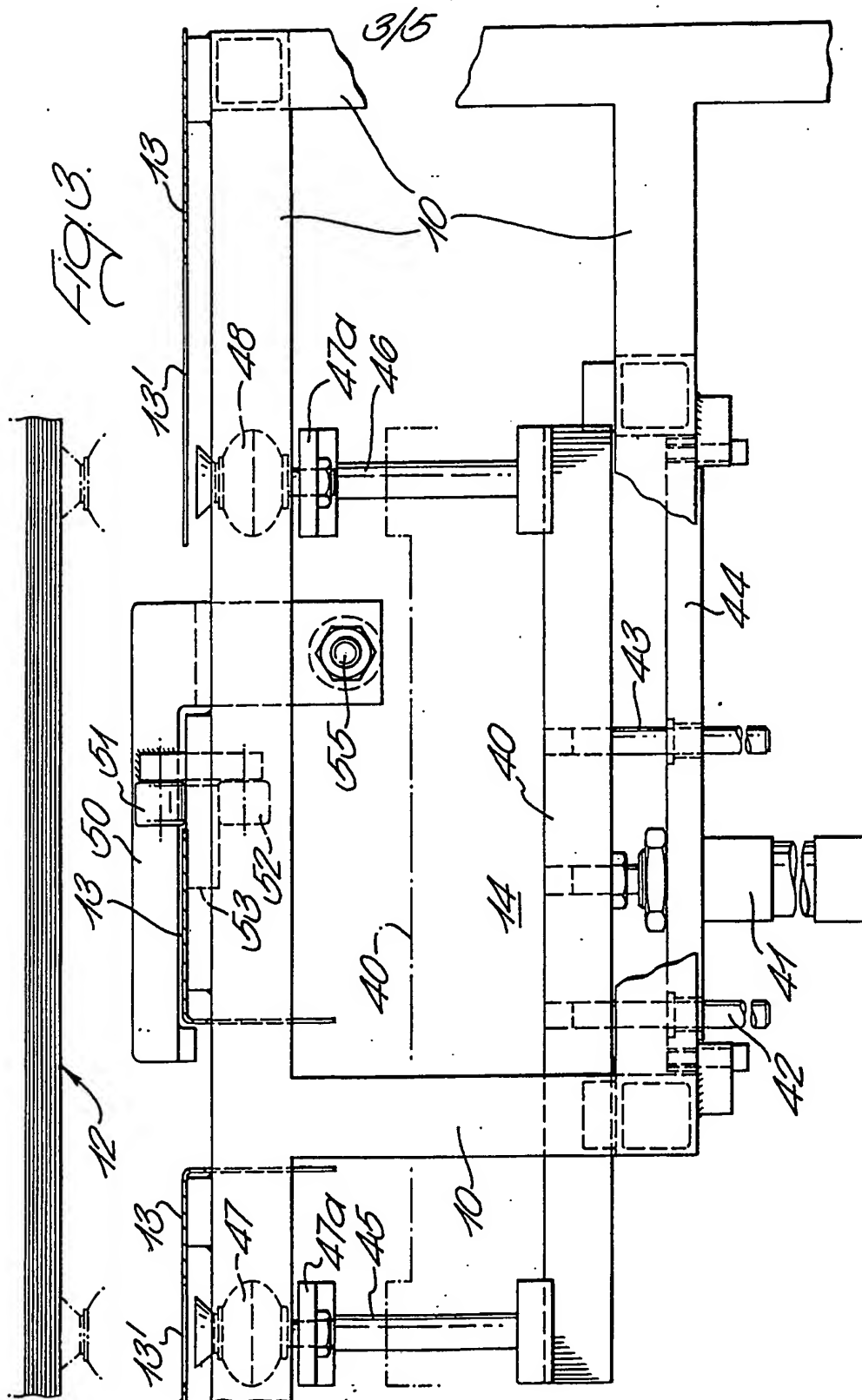


FIG. 1.

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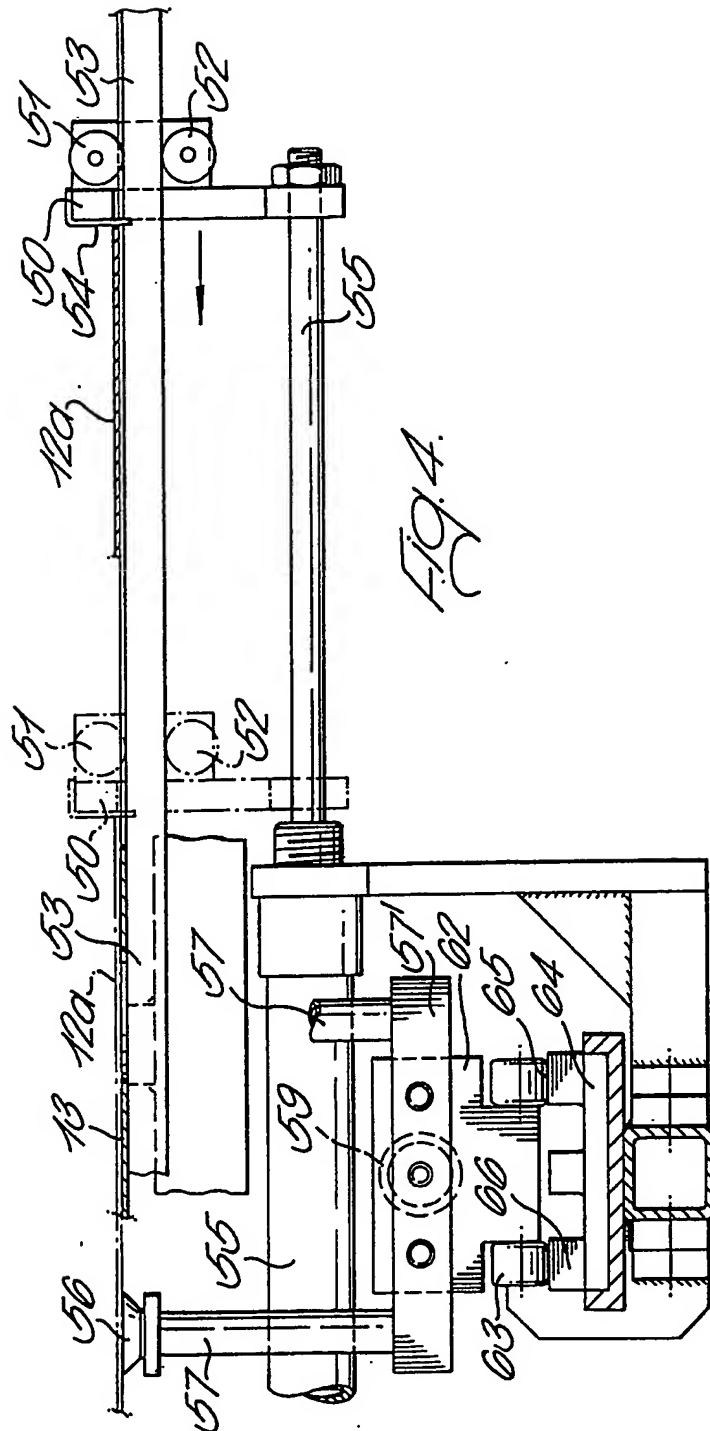


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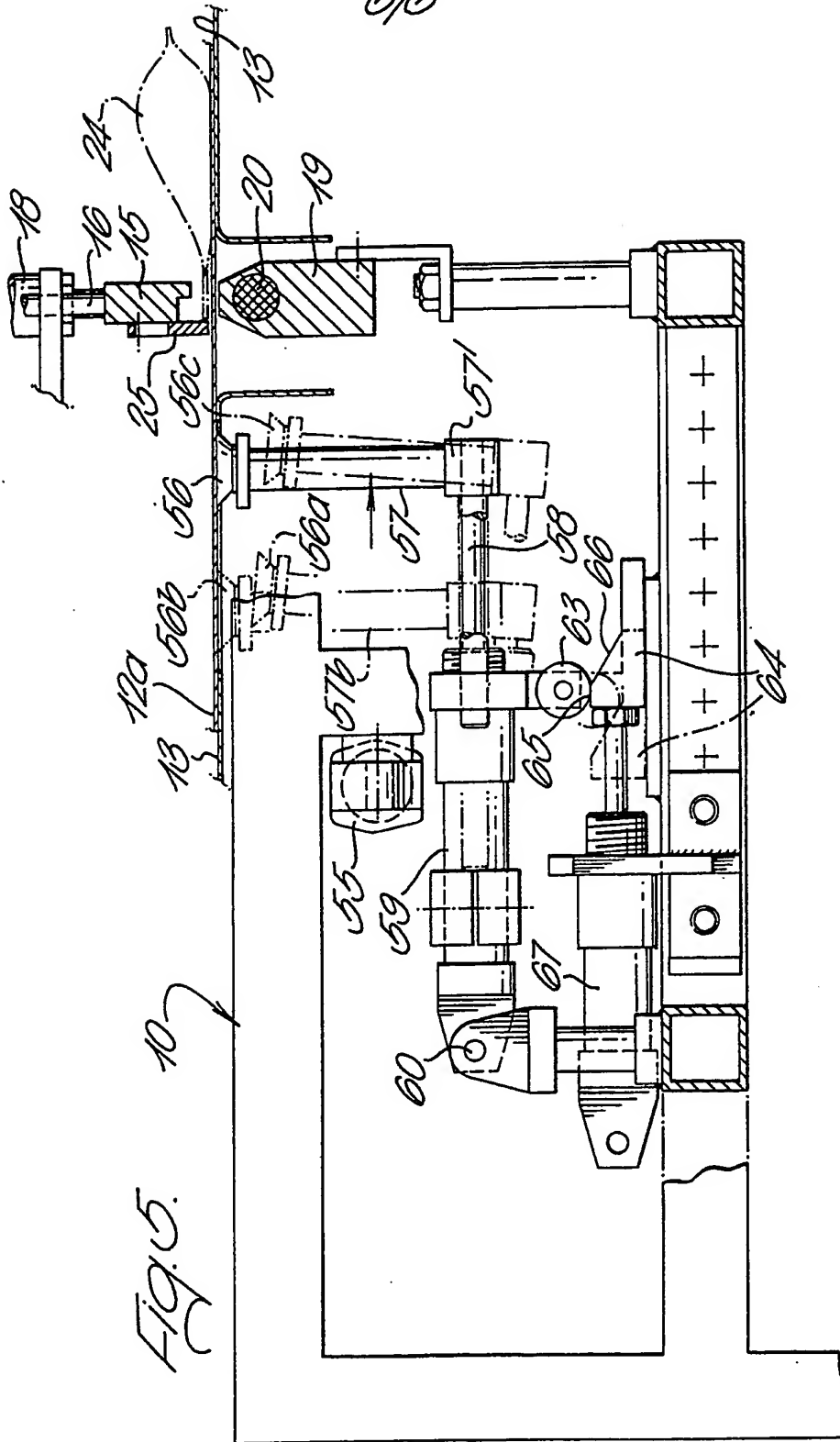
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SPECIFICATION

Machine for and method of heat-sealing articles to a display card

This invention relates to a machine for, and a method of, heat-sealing articles such as sachets of snack type foods, to dispenser or display cards.

It is well known to display articles such as bags of nuts and other snack foods on cards and they are usually attached to the cards by means of slits or perforations in the card through which one end of each bag is inserted to hold the bags on the card.

This invention relates to a machine which will enable such articles to be attached to cards solely by heat-sealing.

The machine comprises a hopper adapted to contain a supply of cards which have been pre-treated with a heat-sealing lacquer, means to transfer the cards one at a time onto a table below a heat-sealing pressure bar, means to cause the heat-sealing pressure bar to come into contact with one edge of each of a series of articles to be heat-sealed to the card, and means located below the table for heating the area below the pressure bar, whereby the lacquer is partially melted so as to cause the articles to stick to the card.

The machine may also comprise means for indexing the card so as to apply a series of rows of articles to the card in a series of sequential operations.

From another aspect the invention comprises a method of manufacturing a dispenser or display card with a series of articles fixed thereto comprising coating the card with a heat-sealing lacquer, applying bags or sachets of the articles to the heat-sealed lacquer surface of the card, and applying pressure from above the card and heat from below the card at one edge of each sachet or bag so as to heat-seal that edge to the card, thus forming a dispenser or display card with a series of rows or articles thereon.

In the accompanying drawing:—

Fig. 1 is a front perspective view of a machine for heat-sealing packages to cards, embodying the invention;

Fig. 2 is a perspective oblique elevation of the central part only of the machine shown in Fig. 1, drawn to an enlarged scale;

Fig. 3 is a partial side elevation, seen from the right-hand side of Fig. 1 showing details of the feed transfer mechanism for moving the cards in a hopper onto the table;

Fig. 4 is a cross-section through part of the machine shown in Fig. 1 illustrating the cross-transfer mechanism, for moving cards across the table into line with the heat-sealing mechanism; and

Fig. 5 is a sectional elevation of part of the machine, showing the forward indexing mechanism for moving the cards forward below the heat-sealing mechanism.

The machine illustrated in Fig. 1 has a basic framework 10 which supports a hopper 11 containing a stack of cards 12 which are pre-

coated with a heat-sealing adhesive. Adjacent the hopper 11 is a table 13 and below the table is a feed transfer mechanism 14 for moving the cards from the hopper, one at a time, on to the table.

To the left of the hopper is located a heat-sealing pressure bar 15 supported on rods 16 and 17 and movable vertically by means of a pneumatic or hydraulic ram 18.

The table is broken away to show that, below the level of the table is a heater bar 19 supplied with current from cables 20.

The ram operating the pressure bar 15 and the indexing mechanism to be described later are controlled by an electrical pneumatic circuit including two switches operable by buttons must be pressed to operate the pressure bar.

The heat-sealing mechanism comprising the heat-sealing pressure bar 15 and heater bar 19 is more clearly shown in Fig. 2.

In Fig. 2, a card 23 with bags of nuts 24 on it, is shown in the position it occupies immediately prior to heat-sealing the bags to the card. The heat-sealing pressure bar is located immediately above adjacent ends of the bags 24 which abut a back-plate 25. The back-plate is attached to the bar 15 by means of bolts (not shown) which pass through slots so that, as the pressure bar 15 is moved up and down by the ram 18, the back-plate 25 remains stationary, under the influence of gravity. Thus back-plate 25 forms an abutment against which the ends of the bags 24 may be rested to ensure that they are in a straight line before heat-sealing them to the card.

When the operator presses the two buttons 21 and 22 shown in Fig. 1 the pressure bar 15 is lowered by the ram 18, the heater element 19 below the level of the table being constantly energised so as to melt the adhesive on the card sufficiently to heat-seal the bags to the card.

As the pneumatic or hydraulic ram 18 lowers the bar 15, the rods 16 and 17 will, of course, move down. Attached to rod 16 is a cam 26 which, as the bar 15 moves on its upward stroke contacts a wheel 27 attached to an arm 28 to operate a micro-switch which in turn operates an indexing mechanism to move the card 23 along, so as to make room for the next row of bags to be placed upon it.

Also shown in Fig. 2 is a sensor 29 which senses the presence of a card and indicates when a card has been indexed forwardly until no card lies below the sensor 29. This sensor is then used to start the sequence for introducing another card in conjunction with another sensor 29a to ensure that the previous card has been removed.

The feed mechanism 14 for transferring the cards 12 from the stack onto the table is shown in more detail in Fig. 3. It comprises a carriage 40 supported and movable by a hydraulic ram 41 and having guide rods 42 and 43 which pass through holes in the framework 44. The carriage 40 carries two pairs of columns 45 and 46 (shown in Fig. 1 and Fig. 3) each of which supports a platform 47a carrying suction devices 47 and 48 respectively at their upper ends. The ram 41 can be operated to

move the suction devices 47 and 48 up until they engage a card at the bottom of the stack 12. The suction devices pass through cut-outs 13' in the table 13 (as illustrated generally in Fig. 1). When the suction devices are lowered by again operating the hydraulic ram 41, the card will be brought down to table level and the suction devices are then de-energised to let go of the card, so that it remains on the table.

- 10 The next movement required is to transfer a card across the table and this is done by the mechanism shown in Figs. 3 and 4.

The card transfer mechanism includes a transfer bar 50 supported by wheels 51, 52 which engage a track 53. The bar 50 has a facing 54 which abuts the edge of a card 12a on the table (as shown in the right-hand firm line position of Fig. 4).

- 20 A ram 55 moves the transfer bar 50 to the dotted line position, shown on the left-hand side of Fig. 4 so that the card is now located in line with indexing mechanism, the heat sealing pressure bar 15 and above the heater bar 19.

With the card 12a in this position the operator stacks the bags 24 on the card in a row as shown in Fig. 2, so that the edges of the bags abut back plate 25. The operator then presses both buttons 21 and 22 (one button with each hand) to cause the heat sealing pressure bar 15 to be lowered to the heat sealing position. On release of the buttons 21 and 22 the pressure bar 15 reverts to a position shown in Fig. 2.

- A set of suction pads 56 is carried by vertical arms 57 supported by a cross bar 57' mounted on a piston rod 58 operable by a ram 59. Ram 59 is pivoted at 60 to a fixed support 61, and also supported by a foot 62 which carries a wheel 63. Wheel 63 rests on a movable cam block 64 which has a flat surface 65 and a sloping surface 66. Block 64 can be moved from the firm line or positive position to the chain dotted line or negative position by means of ram 67.

In the rest position of the mechanism the block 64 is in its negative position with wheel 63 resting on the lower end of slope 66 so that suction pad 56 occupies the position marked 56a.

- The block 64 is then moved in a position direction (to the right) until wheel 63 is resting on horizontal surface 65 so that arm 57 straightens up to position 57b and suction pad 56 moves to position 56b where it engages the underside of card 12a.

Ram 59 is now operated to move arm 57 and suction pad 56 (and therefore the card 12a) to the right-hand firm line position shown in Fig. 5.

Suction pad 56 can now be moved to position 56c by withdrawing block 64 to the negative position to allow wheel 63 to roll down slope 66.

Ram 59 can then be operated to return the mechanism to the rest position described above with suction pad 56 in position 56a.

Thus the card 12a has been indexed forward sufficiently to allow room for a further row of bags 24.

- 65 When the required number of rows of bags

have been heat sealed to the card the operator will remove the loaded card. The sensing device 29a will then signal the transfer ram 55 to introduce another card to the loading position. At the same time feed mechanism 14 will produce another card to the table surface 13 from the stack of cards 12 in the hopper.

CLAIMS

1. A machine for heat-sealing articles to a display card, the machine comprising a hopper adapted to contain a supply of cards which have been pre-treated with a heat-sealing lacquer, means to transfer the cards one at a time onto a table below a heat-sealing pressure bar, means to cause the heat-sealing pressure bar to come into contact with one edge of each of the series of articles to be heat-sealed to the card, and means located below the table for heating the area below the pressure bar, whereby the lacquer is partially melted so as to cause the article to stick to the card.

2. A machine according to claim 1 including means for indexing the card so as to apply a series of rows of articles to the card in a series of sequential operations.

3. A machine according to claim 2 in which the means for indexing the card along comprises a number of suction pads carried on arms supported on a piston movable by a ram, the piston being pivoted at one end and having its other end supported on a wheel engageable on a cam block, the cam block in turn being carried on a piston movable by a second ram, the cam block having a flat surface and a sloping surface, the arrangement being such that relative movements of the two rams will cause the suction pads to be raised or lowered and moved laterally so as to move the card along to index it.

4. A machine according to any preceding claim and in which the pressure bar carries a back-plate which does not move up and down with the pressure bar and provides an abutment against which the ends of the bags may be rested to ensure that they are in a straight line.

5. A machine according to any preceding claim in which movement of the pressure bar is initiated by operation of two spaced push-buttons, so that the operator can use both hands to operate the bar.

6. A method of manufacturing a dispenser or display card with a series of articles fixed thereto comprising coating the cards with a heat-sealing lacquer, applying bags or sachets of the articles to the heat-sealed lacquer surface of the card, and applying pressure from above the card and heat from below the card at one edge of each sachet or bag so as to heat-seal that edge, the card thus forming a dispenser or display card with a series of rows of articles thereon.

7. A method according to claim 6 and including the steps of indexing the card along when the first row of bags has been heat-sealed to it so as to move it into position to receive a second row of bags and so on.

8. A machine for heat-sealing articles to display cards substantially as hereinbefore particularly described and as illustrated in the accompanying drawings.

5 9. A method of heat-sealing articles to a display card substantially as hereinbefore particularly described and as illustrated in the accompanying drawings.

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